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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,719	02/16/2001	Dale W. Russell	CML00012H	4258

22917 7590 11/16/2004

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EXAMINER	
SHORTLEDGE, THOMAS E	

ART UNIT	PAPER NUMBER
2654	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/785,719	RUSSELL, DALE W.	
	Examiner	Art Unit	
	Thomas E Shortledge	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12,14-25,27-37 and 39-42* is/are rejected.

7)☒ Claim(s) *13,26, and 38* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/16/01*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 13, 26, and 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: Claim 12, 26, and 38 discuss:

creating grammar rules for the atomic values of the simple attribute;

adding said created atomic value grammar rules to said new grammar;

creating grammar rules requiring the name of the object including the simple attributes and the atomic value of the domain attribute; and

adding said grammar rules created to said new grammar.

Okajima et al. (4,980,829), Eberman et al. ((5,805,775), Mohri et al. (6,243,679), and Monaco (6,434,523) teach creating grammar rules based on attributes, requiring the name of the object, and adding the grammar rule to the grammar.

However, they do not teach the atomic values of the simple attribute, adding atomic value grammar rules to the new grammar, no of simple attributes and the atomic value of the domain attribute.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1,2,10-12,14,18,19, 25, 30, 31 and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Okajima et al (4,980,829).

As to claim 1, Okajima et al. teach:

a method of creating a grammar for a natural language dialog system from a domain model, (establishing a set of grammar rules for a machine translation system, from a domain, (col. 4, lines 23-25). "Dialog System" has not been given patentable weight because nothing specifically pertaining to dialogic interaction between user and computer has been claimed);

creating instances of general purpose grammar rules as a new grammar, said general purpose grammar rules including a plurality of selected objects, each of said objects including one or more (components of the text) attributes, (establishing sets of grammar rules, with objects of the text, where each object is made up of pairs or components of the text, col. 4, lines 23-27);

creating an umbrella rule for each broad category of queries in said general purpose grammar rules (a grammar file containing the rules that are related based on their dependence of the domains of the text, col. 4, lines 54-56);

selectively including objects as domain objects in said new grammar (including objects based on the domains selected by the grammar rules, col. 4, lines 25-27);

creating umbrella rules for domain object attributes (a table rule containing the components of the text, col. 5, lines 15-17); and

selectively including attributes in said new grammar (components of the text are included based on the domain and objects used, col. 4, lines 25-27)

As to claim 18, Okajima et al teach:

creating instances of general purpose grammar rules as a new grammar, said general purpose grammar rules including a plurality of selected objects, each of said objects including one or more (components of the text) attributes, (establishing sets of grammar rules, with objects of the text, where each object is made up of pairs or components of the text, col. 4, lines 23-27);

creating an umbrella rule for each broad category of queries in said general purpose grammar rules (a grammar file containing the rules that are related based on their dependence of the domains of the text, col. 4, lines 54-56);

selectively including objects as domain objects in said new grammar (including objects based on the domains selected by the grammar rules, col. 4, lines 25-27);

selectively including attributes in said new grammar (components of the text are included based on the domain and objects used, col. 4, lines 25-27)

detecting and repairing inconsistencies in said new grammar (reducing the number of rules used to the absolute minimum, col. 7, lines 25-27. It would be inherent that reducing the number of rules would include detecting and repairing inconsistencies in the new grammar.).

As to claim 30, Okajima et al. teach:

a computer program product for creating a natural language dialog grammar from a domain model, comprising a computer usable medium having computer readable program thereon (a machine translation system is equipped with control means for establishing sets of grammar rules (col. 4, lines 23-27). The machine translation system is made up of a memory storing a variety of information and a central processing unit (col. 4, lines 50-52). It would be inherent that a computer program would be used to communicate between the processor and the memory).

forming a new grammar including instances of general purpose grammar rules, said instances of general purpose rules being a plurality of objects, each of said objects including one or more attributes(establishing sets of grammar rules, with objects of the text, where each object is made up of pairs or components of the text, col. 4, lines 23-27);

creating umbrella rules, umbrella rules being created for query categories and for attributes (a grammar file containing the rules that are related based on their dependence of the domains of the text and the parts of the text, col. 4, lines 54-56);

selecting objects and attributes included as domain objects and domain object attributes in said new grammar (including objects based on the domains selected by the grammar rules, (col. 4, lines 25-27), and components of the text are included based on the domain and objects used, col. 4, lines 25-27);

As to claims 2, 19, and 31, Okajima et al. teach:

creating an initially empty new grammar (establishing a set of grammar rules based on the dependence of the input, col. 4, lines 23-28);

opening a template grammar (pattern), said template grammar including parameterized general purpose rules to be instantiated (the pattern contains the rules and domain designating the area of the unit to be translated, col. 6, lines 15-18);

creating instances of said general purpose rules (the selected domain (col. 6, lines 9-10) that contain the rules to recognize the type and style of the characters within the defined pattern, col. 6 lines 23-27);

adding the instantiated general purpose rules to said new grammar (storing sets of grammar rules depending on the domains of the text to be translated, col. 4, lines 55-56. The domain contain the rules to recognize the type and style of the characters of the defined pattern, col. 6, lines 15-18).

As to claims 10, and 25, Okajima et al. teach the developer selects whether an attribute is included in the new grammar (the information of sentence attributes may be designated by the user, col. 7, lines 12-15).

As to claim 11, Okajima et al. teach:

including attribute name grammar rules naming said attributes (attributes are named by the code part within col. 426, fig. 8, and how they are relating to fig. 7)

identifying whether said named attribute is complex or simple (able to find if a word or part of a sentence has more than one meaning (col. 9, lines 25-35). If the word has more than one meaning it would be inherently complex, versus a single meaning, making that word or part of a sentence simple).

As to claim 12, Okajima et al. teach:

creating grammar rules relating the object including said complex attribute to a (part of speech or utterance) subsidiary domain object, (environment information denotes which meaning of the word to use, col. 9, lines 20-29).

adding said created relating grammar rules to said new grammar (The environment information would be inherently added to the grammar, to disambiguate future uses of the word).

As to claims 14 and 39, Okajima et al. teach detecting and repairing inconsistencies in the newly created grammar (reducing the number of rules used to the

absolute minimum, col. 7, lines 25-27. It would be inherent that reducing the number of rules would include detecting and repairing inconsistencies in the new grammar).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 3-5, 20, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okajima et al. as in claims 1, 19, and 31 above and in further view of Eberman et al. (5,805,775).

As to claim 3, Okajima et al. do not teach each said umbrella rule includes a domain-object-independent non-terminal (non-terminal symbol) in a left-hand side and a set of expansions of said non-terminal in a right-hand side.

However, Eberman et al. teach a rule with a left-hand side and a right-hand side. The left-hand side includes a non-terminal symbol associated with an expression, and the right-hand side contains a sub-string associated with a variable of the non-terminal symbol (col. 4 lines 50-54, 67-69, and col. 5, lines 1-9). The non-terminal symbol of the

left-hand side is domain-object-independent because it can be shared among numerous applications, allowing to be non-domain specific, col. 5, lines 17-23).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation of Okajima et al. with the rule definition of Eberman et al. to create a set of grammar rules to be shared among many applications as taught by Eberman et al. (col. 2, lines 15-20).

As to claim 4, Okajima et al. do not teach each of said set of non-terminal expansions is a domain-specific instantiation of the broad category.

However, Eberman et al. teach a right-hand rule containing a non-terminal symbol associated with a variable or an expression, where they represent instances of the input text (col. 5, lines 5-6, and 62-65). The non-terminal symbol is domain specific when it is marked private, and only relates to one set of application rules, col. 5, lines 15-17).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation of Okajima et al. with the rule definition of Eberman et al. to create a set of grammar rules to be shared among many applications as taught by Eberman et al. (col. 2, lines 15-20).

As to claim 5, Okajima et al. do not teach the domain-object-independent non-terminal relates the umbrella rule to a broad category of rules.

However, Eberman et al. teach a left-hand side of a rule that contains expressions that relate the rule to the chose base interpretive evaluation language (col. 4, lines 67-68, and col. 5, lines 1-3)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation of Okajima et al. with the rule definition of Eberman et al. to create a set of grammar rules to be shared among many applications as taught by Eberman et al. (col. 2, lines 15-20).

As to claim 20, Okajima et al. do not teach creating umbrella rules creates a rule with a left-hand side being a domain-object-independent non-terminal and a right-hand side including a set of expansions of said non-terminal, each of said set of non-terminal expansions being a domain specific instantiation of the broad category, said non-terminal relating the rule to a broad category of rules.

However, Eberman et al. teach:

creating umbrella rules creates a rule with a left-hand side being a domain-object-independent non-terminal and a right-hand side including a set of expansions of said non-terminal (a rule with a left-hand side and a right-hand side. The left-hand side includes a non-terminal symbol associated with an expression, and the right-hand side contains a sub-string associated with a variable of the non-terminal symbol, (col. 4 lines 50-54, 67-69, and col. 5, lines 1-9). The non-terminal symbol of the left-hand side is domain-object-independent because it can be shared among numerous applications, allowing to be non-domain specific, col. 5, lines 17-23).;

each of set of non-terminal expansions being a domain-specific instantiation of the broad category (a right-hand rule containing a non-terminal symbol associated with a variable or an expression, where they represent instances of the input text, col. 5, lines 5-6, and 62-65). The non-terminal symbol is domain specific when it is marked private, and only relates to one set of application rules, col. 5, lines 15-17).;

non-terminal relating the rule to a broad category of rules (a left-hand side of a rule that contains expressions that relate the rule to the chose base interpretive evaluation language, col. 4, lines 67-68, and col. 5, lines 1-3).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation of Okajima et al. with the rule definition of Eberman et al. to create a set of grammar rules to be shared among many applications as taught by Eberman et al. (col. 2, lines 15-20).

As to claim 32, Okajima et al. do not teach creating umbrella rules creates a rule with a left-hand side being a domain-object-independent non-terminal and a right-hand side including a set of expansions of said non-terminal, each of said set of non-terminal expansions being a domain specific instantiation of the broad category, said non-terminal relating the rule to a broad category of rules.

However, Eberman et al. teach:

creating umbrella rules creates a rule with a left-hand side being a domain-object-independent non-terminal and a right-hand side including a set of expansions of said non-terminal (a rule with a left-hand side and a right-hand side. The left-hand side

includes a non-terminal symbol associated with an expression, and the right-hand side contains a sub-string associated with a variable of the non-terminal symbol, (col. 4 lines 50-54, 67-69, and col. 5, lines 1-9). The non-terminal symbol of the left-hand side is domain-object-independent because it can be shared among numerous applications, allowing to be non-domain specific, col. 5, lines 17-23).;

each of set of non-terminal expansions being a domain-specific instantiation of the broad category (a right-hand rule containing a non-terminal symbol associated with a variable or an expression, where they represent instances of the input text, col. 5, lines 5-6, and 62-65). The non-terminal symbol is domain specific when it is marked private, and only relates to one set of application rules, col. 5, lines 15-17).;

non-terminal relating the rule to a broad category of rules (a left-hand side of a rule that contains expressions that relate the rule to the chose base interpretive evaluation language, col. 4, lines 67-68, and col. 5, lines 1-3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation of Okajima et al. with the rule definition of Eberman et al. to create a set of grammar rules to be shared among many applications as taught by Eberman et al. (col. 2, lines 15-20).

6. Claims 6-9, and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okajima et al. as in claims 1 and 18 above, and in view of Monaco (6,434,523).

As to claims 6 and 21, Okajima et al. teach selecting an object from said plurality of objects (column 425 of fig. 8 contains the objects of the pattern that may be selected);

Okajima et al. do not teach presenting said selected object to a developer, said developer deciding whether said object is included in said new grammar.

However, Monaco teaches:

selecting an object from said plurality of objects (selecting the included objects by adding or deleting the objects from a set of objects, col. 3, lines 65-67); and

presenting said selected object to a developer, said developer deciding whether said object is included in said new grammar (the user is able to control the process of adding a deleting objects from the set of objects, col. 3, lines 65-67)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the user selectivity of Monaco to increase to increase the ability for speech grammars to be created quickly and easily, as taught by Monaco, (col. 1, lines 67 and col. 2, lines 1).

As to claims 7 and 22, Okajima et al. do not teach:

creating an umbrella rule for each broad category of object phrases;

creating an object name grammar rule for each created umbrella rule;

allowing the developer to select names for the included object, nor,

adding entries in said grammar for each selected name

However Monaco teaches:

creating an umbrella rule for each broad category of object phrases (the user can combine many objects into one object, which allows the rules of the many objects to be merged into one larger rule, (col. 9, lines 50-55). The created larger rule is obviously an umbrella rule as it contains all the rules of the combined objects, and larger rule is able to represent the other rules);

creating an object name grammar rule for each created umbrella rule (the graphical object generator provides graphical representations of the objects, and the connections between the objects, it may also create objects to represent expressions, col. 6, lines 16-20, and 26-31);

allowing the developer to select names for the included object (the user may enter text to specify a GSL listing representing a grammar, col. 8, lines 1-4)

adding entries in said grammar for each selected name (the user can add objects to the grammar, adding them to different areas within the grammar, col. 9, lines 64-67).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the user selectivity of Monaco to increase to increase the ability for speech grammars to be created quickly and easily, as taught by Monaco, (col. 1, lines 67 and col. 2, lines 1).

As to claims 8 and 23, Okajima et al. teach the object name grammar rules created further includes an object name possessive rule, said object name possessive rule specifying the possessive form of the name of said object, (col. 425 of fig. 8 depicts

the objects, where the code listed is related to fig. 7, where the code depicts the information contained within the object).

As to claims 9 and 24, Okajima et al. teach:

specializing object rules not requiring developer input (the information relating to the object, domain and part can be automatically determined, col. 7, lines 12-15);

specializing query rules requiring only the name of the domain object (col. 425, of fig. 8 depicts the objects, where the code listed is related to fig. 7, where the name of the domain object is listed).

7. Claims 15-17, and 27-29, are rejected under 35 U.S.C. 103(a) as being unpatentable over Okajima et al. as applied to claim 14 and 18 above in view of Mohri et al. (6,243,679)

As to claim 15 and 27, Okajima et al. teach running a grammar checker on the new grammar (checking the new grammar for

Okajima et al. teach creating a new grammar (col. 4, lines 24):

Okajima et al. do not teach:

running a grammar checker on a grammar, said grammar checker identifying unreachable non-terminals;

repairing said created grammar to eliminate identified unreachable non-terminals;

running said grammar checker on said repaired new grammar, said grammar checker identifying non-terminating expressions; nor

repairing said new grammar to eliminate identified non-terminating expansions.

However, Mohri et al. teach:

running a grammar checker on the grammar, said grammar checker identifying unreachable non-terminals (a program to trim a set of states within a string to weight transducer. Includes removing those that are unreachable from initial states (col. 7, lines 30-32), this process would necessarily include identifying the unreachable states first. These transducers are used to model languages and word lattices, it would be necessary that they would also be used to model grammars, col. 5, lines 4-5);

repairing said created grammar to eliminate identified unreachable non-terminals (trimming a set of states includes removing those that are unreachable from initial states col. 7, lines 30-32);

running said grammar checker on said repaired new grammar, said grammar checker identifying non-terminating expressions (removing the non-coaccessible states, those which admit no path to a final state, (col. 7, lines 30-33). It would be obvious that first the non-accessible states would be removed, then after those are repaired within the grammar, the non-coaccessible states are removed.); and

repairing said new grammar to eliminate identified non-terminating expansions (trimming a set of states includes removing those that are non-coaccessible states, those which admit no path to a final state, col. 7, lines 30-33).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the state trimming of Mohri et al. to create the smallest automata (or grammar) without loss of information or capabilities, as taught by Mohri et al. (col. 2, lines 9-12).

As to claim 16 and 28, Okajima et al. teach prompting the developer (the user is able to provide a strategy, setting the rules to be used, col. 9, lines 55-60).

Okajima et al. do not teach:

deleting unreachable non-terminals; and

adding new rules to make all remaining non-terminals reachable.

However Mohri et al. teach:

deleting unreachable non-terminals (col. 7, lines 30-32)

adding new rules to make all remaining non-terminals reachable (removing non-terminals from the set of states (col. 7, lines 30-32), and since $\tau 1$ is traversable after the non-terminals are removed, it would be necessary that the remaining non-terminals were reachable).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation and user interaction of Okajima et al. with the state trimming of Mohri et al. to create the smallest automata (or grammar) without loss of information or capabilities, as taught by Mohri et al. (col. 2, lines 9-12).

As to claim 17 and 29, Okajima et al. teach prompting the developer (the user is asked to provide a strategy, setting the rules to be used, col. 9, lines 55-60).

Okajima et al. do not teach:

deleting identified non-terminating expansions; nor

adding rules terminating all remaining said non-terminating expansions.

However, Mohri et al. teach:

deleting identified non-terminating expansions (trimming to remove all non-coaccessible state, which are those that admit no path to the final state, col. 7, lines 30-33).

adding rules terminating all remaining said non-terminating expressions (trimming to remove all non-coaccessible state, (col. 7, lines 30-33), and since $\tau 1$ is traversable after the non-coaccessible states are removed, it would be necessary that the remaining non-coaccessible states were terminated).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the state trimming of Mohri et al. to create the smallest automata (or grammar) without loss of information or capabilities, as taught by Mohri et al. (col. 2, lines 9-12).

8. Claims 33-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okajima et al. in view of Eberman et al. as applied to claim 32 above, and further in view of Monaco.

As to claim 33, Okajima et al. and Eberman et al. do not teach:

selecting an object from said plurality of objects; nor

presenting said selected object to a developer, said developer deciding whether said object is included in said new grammar.

However, Monaco teaches:

selecting an object from said plurality of objects (selecting the included objects by adding or deleting the objects from a set of objects, col. 3, lines 65-67); and

presenting said selected object to a developer, said developer deciding whether said object is included in said new grammar (the user is able to control the process of adding a deleting objects from the set of objects, col. 3, liens 65-67)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the computer program of Eberman et al. and with the user selectivity of Monaco to increase to increase the ability for speech grammars to be created quickly and easily, as taught by Monaco, (col. 1, lines 67 and col. 2, lines 1).

As to claim 34, Okajima et al. and Eberman et al. do not teach the developer selects whether an attribute is included in the new grammar.

However, Monaco teaches the user has the ability to add selected alternative expressions to the objects, (col. 9, lines 46-48).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the

computer program of Eberman et al. and with the user selectivity of Monaco to increase to increase the ability for speech grammars to be created quickly and easily, as taught by Monaco, (col. 1, lines 67 and col. 2, lines 1).

As to claim 35, Okajima et al. and Eberman et al. do not teach:

creating object name grammar rules for umbrella rules;

receiving a name selection from a developer, said name selection selectively including said object name created by computer responsive to creating said object name grammar rules; nor

entering names in said new grammar responsive to selection by said developer.

However Monaco teaches:

creating object name grammar rules for umbrella rules (the graphical object generator provides graphical representations of the objects, and the connections between the objects, it may also create objects to represent expressions, col. 6, lines 16-20, and 26-31);

receiving a name selection from a developer, said name selection selectively including said object name created by computer responsive to creating said object name grammar rules (the user may enter text to specify a GSL listing representing a grammar, col. 8, lines 1-4); and

entering names in said new grammar responsive to selection by said developer (the user can add objects to the grammar, adding them to different areas within the grammar, col. 9, lines 64-67).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the computer program of Eberman et al. and with the user selectivity of Monaco to increase to increase the ability for speech grammars to be created quickly and easily, as taught by Monaco, (col. 1, lines 67 and col. 2, lines 1).

As to claim 36, Okajima et al. teach the object name grammar rules created further includes an object name possessive rule, said object name possessive rule specifying the possessive form of the name of said object (col. 425 of fig. 8 depicts the objects, where the code listed is related to fig. 7, where the code depicts the information contained within the object. Since the code depicts the information contained within the object, the name used would obviously be the possessive of the object).

As to claim 37, Okajima et al. teach:

automatically specializing object rules (the information relating to the object, domain and part can be automatically determined, col. 7, lines 12-15);and

specializing query rules requiring only the name of the domain object (col. 425, of fig. 8 depicts the objects, where the code listed is related to fig. 7, where the name of the domain object is listed).

9. Claims 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okajima et al. in view of Eberman et al. as applied to claim 39 above, and further in view of Mohri et al.

As to claim 40, Okajima et al. and Eberman et al. do not teach:

identifying unreachable non-terminals;

eliminating identified unreachable non-terminals;

identifying non-terminating expressions; nor

eliminating identified non-terminating expansions.

However, Mohri et al. teach:

identifying unreachable non-terminals (trimming a set of states within a string to weight transducer. Includes removing those that are unreachable from initial states (col. 7, lines 30-32), this process would necessarily include identifying the unreachable states first. These transducers are used to model languages and word lattices, it would be necessary that they would also be used to model grammars, col. 5, lines 4-5);

eliminating identified unreachable non-terminals (trimming a set of states includes removing those that are unreachable from initial states col. 7, lines 30-32);

identifying non-terminating expressions (trimming a set of states includes removing those that are non-coaccessible states, those which admit no path to a final state, (col. 7, lines 30-33), this process would necessarily include identifying the non-terminating expressions before they are removed.); and

eliminating identified non-terminating expansions (trimming a set of states includes removing those that are non-coaccessible states, those which admit no path to a final state, col. 7, lines 30-33).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the computer program of Eberman et al. and with the state trimming of Mohri et al. to create the smallest automata (or grammar) without loss of information or capabilities, as taught by Mohri et al. (col. 2, lines 9-12).

As to claim 41, Okajima et al. and Eberman et al. do not teach

Selectively deleting identified unreachable non-terminals; nor

Selectively adding new rules making identified unreachable non-terminals reachable.

However Mohri et al. teach:

selectively deleting identified unreachable non-terminals (col. 7, lines 30-32)

selectively adding new rules making identified unreachable non-terminals reachable (removing non-terminals from the set of states (col. 7, lines 30-32), and since $\tau 1$ is traversable after the non-terminals are removed, it would be necessary that the remaining non-terminals were reachable).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the computer program of Eberman et al. and with the state trimming of Mohri et al. to create

the smallest automata (or grammar) without loss of information or capabilities, as taught by Mohri et al. (col. 2, lines 9-12).

As to claim 42, Okajima et al. and Eberman et al. do not teach:

selectively deleting identified non-terminating expansions; nor

selectively adding rules terminating identified non-terminating expressions.

However Mohri et al. teach

selectively deleting identified non-terminating expansions (trimming to remove all non-coaccessible state, which are those that admit no path to the final state, col. 7, lines 30-33).

selectively adding rules terminating identified non-terminating expressions (trimming to remove all non-coaccessible state, (col. 7, lines 30-33). and since $\tau 1$ is traversable after the non-coaccessible states are removed, it would be necessary that the remaining non-coaccessible states were terminated).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the grammar creation method of Okajima et al. with the computer program of Eberman et al. and with the state trimming of Mohri et al. to create the smallest automata (or grammar) without loss of information or capabilities, as taught by Mohri et al. (col. 2, lines 9-12).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reed (5,095,432), Kendall et al. (5,995,918), Kuo et al. (6,418,440), and Sundaresan (6,487,566).

Reed teaches a context free parsing algorithm employing a context free grammar.

Kendall et al. teach creating a language grammar using a table.

Kuo et al. teach an interactive dialogue system that allows the system and database to be automatically modified.

Sundaresan teaches creating a rule language in an XML document for natural language matching and replacing.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas E Shortledge whose telephone number is (703)605-1199. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Smits can be reached on (703)306-3011. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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TS
10/18/2004

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